

Instructions for Section A

Answer all questions in pencil on the answer sheet provided for multiple-choice questions. Choose the response that is correct or that best answers the question.

A correct answer scores 1, an incorrect answer scores 0.

Marks will not be deducted for incorrect answers.

No marks will be given if more than one answer is completed for any question.

AREA OF STUDY 1 – Brain and nervous system

The cerebral cortex

A. acts as a protective layer covering the brain.

- A. acts as a protective layer covering the brain.
- B. connects the right hemisphere with the left hemisphere.
- C. is responsible for voluntary muscle movements.
- D. increases the strength of the immune system.

The cerebral cortex is approximately _____ thick.

The cerebral cortex is approximately _____ thick.

- A. 2 to 5 millimetres
B. 6 to 10 millimetres
C. 2 to 5 centimetres
D. 6 to 10 centimetres

The is a band of nerve fibres connecting the left and right hemispheres.

A. cerebral cortex

- B. cerebral hemisphere
- C. corpus callosum
- D. cerebellum

Paul suffered a head injury as a result of a sporting accident.

Since the accident, Paul has great difficulty speaking. He generally speaks in very short, unclear sentences, and often omits simple words such as 'the' and 'a'. Psychological testing has indicated that Paul's reading and writing abilities are unaffected.

Paul has most likely suffered damage to area in the lobe.

- A. Broca's; temporal
- B. Wernicke's; frontal
- C. Broca's; frontal
- D. Wernicke's; temporal

STUDENT NUMBER

Figures							
Words							

PSYCHOLOGY

Written examination 1

Tuesday 6 June 2006

Reading time: 9.00 am to 9.15 am (15 minutes)

Writing time: 9.15 am to 10.45 am (1 hour 30 minutes)

QUESTION AND ANSWER BOOK

Structure of book

Section	Area of study	Number of questions	Number of questions to be answered	Number of marks
A	1. Brain and nervous system	18	18	18
	2. Visual perception	13	13	13
	3. States of consciousness	13	13	13
B	1. Brain and nervous system	7	7	18
	2. Visual perception	6	6	14
	3. States of consciousness	6	6	14
Total				90

- Students are permitted to bring into the examination room: pens, pencils, highlighters, erasers, sharpeners and rulers.
- Students are NOT permitted to bring into the examination room: blank sheets of paper and/or white out liquid/tape.
- No calculator is allowed in this examination.

Materials supplied

- Question and answer book of 18 pages.
 - Answer sheet for multiple-choice questions.
- Instructions**
- Write your **student number** in the space provided above on this page.
 - Check that your **name** and **student number** as printed on your answer sheet for multiple-choice questions are correct, and sign your name in the space provided to verify this.
- All written responses must be in English.

At the end of the examination

- Place the answer sheet for multiple-choice questions inside the front cover of this book.

Students are NOT permitted to bring mobile phones and/or any other unauthorised electronic devices into the examination room.

Question 5

The primary somatosensory cortex is located in which lobe of the brain?

- A. frontal
- B. parietal
- C. temporal
- D. occipital

Question 6

Tony is looking straight ahead at a projector screen. His right eye is covered with a blindfold. An image of a penguin is projected onto the middle of the screen.

This information would be registered in _____ hemisphere(s).

- A. the right
- B. the left
- C. both the left and right
- D. neither the left nor right

Question 7

Carmela is looking straight ahead at a projector screen. A picture of a wombat is flashed to her right visual field only.

If Carmela's corpus callosum was completely severed, what would be the best way for her to demonstrate what she had seen?

- A. to name it verbally
- B. to draw it with her right hand
- C. to draw it with her left hand
- D. to name and draw it with either hand

Question 8

The brain scanning methods that provide the most comprehensive information on the functioning brain are _____ and _____.

- A. PET; fMRI
- B. CT; MRI
- C. MRI; fMRI
- D. CT; PET

Question 9

In which of the following areas has the brain stimulation method **not** provided important information?

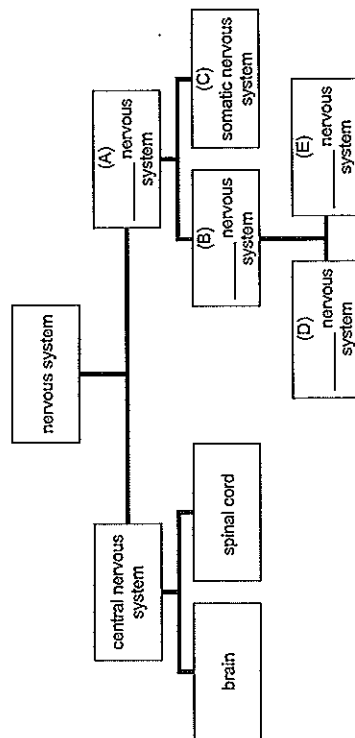
- A. mapping of the somatosensory cortex
- B. hemispheric specialisation
- C. identification of specific language areas in the brain
- D. brain wave patterns

Question 10

The somatic nervous system carries information from _____ to the _____.

- A. the peripheral nervous system; autonomic nervous system
- B. the sympathetic nervous system; parasympathetic nervous system
- C. skeletal muscles; sensory receptors
- D. sensory receptors; CNS

Questions 11 and 12 relate to the following diagram, which illustrates the divisions of the nervous system.

**Question 11**

What are the correct labels for the boxes labelled (A) and (B)?

- A. sympathetic; parasympathetic
- B. peripheral; autonomic
- C. sympathetic; peripheral
- D. parasympathetic; autonomic

Question 12

What are the correct labels for the boxes labelled (D) and (E)?

- A. sympathetic; parasympathetic
- B. peripheral; autonomic
- C. sympathetic; peripheral
- D. parasympathetic; autonomic

Question 13

Ralph has been in a bicycle accident. This has caused severe brain damage and left him in a coma. Despite this, his internal organs (for example, his heart) continue to function.

This is because his _____ is still able to operate.

- A. somatic nervous system
- B. corpus callosum
- C. autonomic nervous system
- D. digestive system

Questions 14 and 15 relate to the following information.

John is sitting quietly watching the television late at night. He hears a very loud noise, like a gunshot, just outside his window. He jumps out of his chair, his muscles tense, and he can feel his heart thump hard in his chest.

Question 14

John's reactions are controlled primarily by his _____ nervous system.

- A. sympathetic
- B. parasympathetic
- C. central
- D. somatic

Question 15

John quickly realises that the noise was just a car backfiring. He calms down, his heart stops thumping and his muscles relax.

These reactions are controlled primarily by his _____ nervous system.

- A. sympathetic
- B. parasympathetic
- C. central
- D. somatic

Question 16

For many years Silvia worked long, strenuous hours and found little time to relax. Eventually, she suffered a heart attack. Her heart attack was most likely a result of her stressful lifestyle.

Silvia's body responded to the stress she was experiencing by

- A. increasing the functioning of the immune system.
- B. increasing blood pressure.
- C. decreasing breathing rate.
- D. decreasing level of arousal.

Question 17

At which point in the General Adaptation Syndrome does the sympathetic nervous system help an organism prepare to deal with a stressor?

- A. shock
- B. countershock
- C. resistance
- D. exhaustion

Question 18

A psychologist is conducting research into a new brain scanning technique that has the potential to reveal important new information about brain function. The technique, however, involves a potential risk associated with exposure to chemicals. The impact of the chemicals on people is largely unknown. In weighing up the risks and benefits associated with this study, the researcher is primarily considering which important ethical issue?

- A. beneficence
- B. integrity
- C. respect for persons
- D. justice

AREA OF STUDY 3 – States of consciousness

Question 32

Which of the following is most likely to be associated with normal waking consciousness?

- A. coma
- B. selective attention
- C. dreams
- D. insomnia

Question 33

Which of the following is most likely to rely on controlled processing?

- A. tapping your pen repeatedly on the desk
- B. listening to background music
- C. washing the dishes
- D. composing an essay

Question 34

Selective attention occurs when a person

- A. concentrates on one task while ignoring others.
- B. divides their attention between two or more tasks.
- C. is carrying out only one task and this is automatic.
- D. is not highly focused on any particular task.

Question 35

A number of physiological measures can be used to study states of consciousness.

Physiological measures that are commonly used include

- A. electroencephalogram, self reports, blood pressure.
- B. galvanic skin response, body temperature, heart rate.
- C. glucose absorption in the brain, blood pressure, electromyogram.
- D. heart rate, electroencephalogram, CT scan.

Question 36

The pattern of EEG waves present when someone is awake and alert is characterised by _____ waves.

- A. alpha
- B. beta
- C. theta
- D. delta

Question 37

Stage 1 sleep primarily consists of

- A. alpha and theta waves.
- B. beta and theta waves.
- C. beta and alpha waves.
- D. alpha and delta waves.

Question 38

During which stage of sleep would you expect to find delta waves starting to appear?

- A. stage 1
- B. stage 2
- C. stage 3
- D. stage 4

Question 39

According to most sleep experts, the most effective way to treat insomnia is

- A. medication.
- B. dietary and lifestyle changes.
- C. going to a sleep clinic.
- D. staying awake for extremely long periods of time.

Question 40

A person diagnosed with hypersomnia is likely to

- A. take longer than 30 minutes to fall asleep.
- B. function normally on very few hours of sleep (less than 5) per day.
- C. suddenly collapse into REM sleep at random times during wakeful periods of the day.
- D. fall asleep immediately upon going to bed.

Questions 41–44 relate to the following information.

A psychologist has devised a new technique that is designed to alleviate the feeling of stress and induce sleep. She sets up two conditions. The experimental condition involves being taught the technique while the control condition does not.

Question 41

To minimise the effects of individual differences between the participants in each condition, which research design could the psychologist use?

- A. independent-groups design
- B. matched-participants design
- C. between-subjects design
- D. counterbalancing design

Question 42

When obtaining informed consent from prospective participants, the psychologist must

- A. tell the participants of any risks involved in the study.
- B. coerce the participants to become involved in the study.
- C. debrief the participants after the study.
- D. allow participants to withdraw from the study at any time.

Question 43

While carrying out an experiment, the psychologist unintentionally encouraged the experimental group to perform well.

The psychologist's influence on the participants confounded the results and is known as the

- A. participant effect.
- B. experimenter effect.
- C. bias effect.
- D. random allocation effect.

Question 44

To overcome the problem outlined in Question 43, the psychologist could

- A. employ a research assistant, who is unaware which group the participants are in, to collect the results.
- B. make sure the participants do not know which group they are allocated to.
- C. include a placebo group.
- D. use a stratified sampling technique.

SECTION B – Short-answer questions

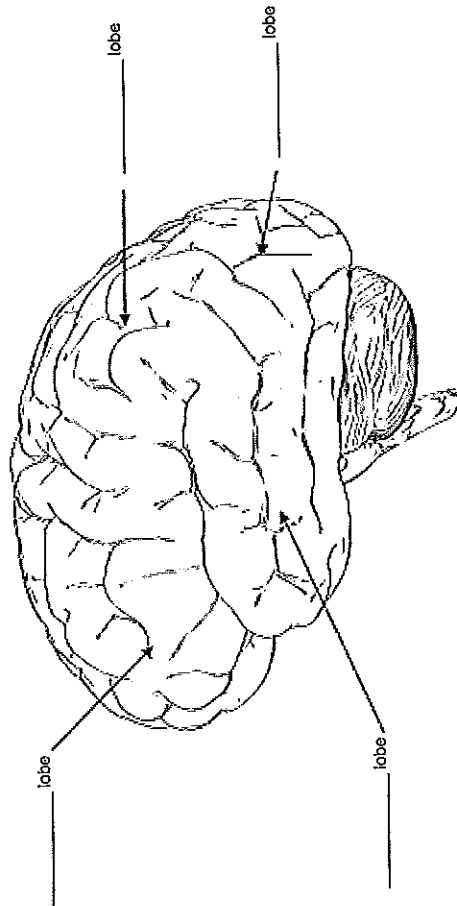
Instructions for Section B

Answer all questions in the spaces provided.

AREA OF STUDY 1 – Brain and nervous system

Question 1

Correctly label the brain lobes indicated on the diagram below.



4 marks

Question 2

Describe two functions of Wernicke's area.

1. _____

2. _____

2 marks

Question 3

- a. In terms of the potential risks to participants, describe one disadvantage of PET scanning in comparison with CT scanning.

1 mark

- b. If a person has a metallic implant in their body, such as a heart pacemaker or a pin in a bone, they are advised not to undertake a certain brain scanning technique. What is the name of this technique?

1 mark

Question 4

The polygraph is used as a lie detector in some countries.

- a. A number of control questions are asked when undergoing a lie detector test. In order to establish a baseline physiological response, the control questions vary from each other. How do these questions vary?

1 mark

- b. Anthony underwent a polygraph test and was accused of lying when, in fact, he was telling the truth. Describe how this incorrect conclusion could have been reached. Give two explanations.

1. _____

2. _____

2 marks

Question 5

Zoe has developed a bad cold and cough and visits her doctor. In taking Zoe's history, the doctor discovers that Zoe has just completed several highly important university exams. Among other recommendations, Zoe's doctor suggests she undertake some form of relaxation training to reduce her stress levels.

- a. How may the stress associated with Zoe's examination period contribute to her illness?

1 mark

- b. What stage of the General Adaptation Syndrome is Zoe most likely to be experiencing?

1 mark

- c. With reference to the General Adaptation Syndrome, why would Zoe's doctor have recommended relaxation?

1 mark

Question 6

Explain how the flight-flight response increases a person's chances of survival.

2 marks

Question 7

Professor Edwards is interested in conducting brain research. To do so, he must always follow ethical guidelines, including getting informed consent from participants. What information does the participant need to have in order to give informed consent?

2 marks

AREA OF STUDY 3 – States of consciousness

Question 14

Yusef has just obtained his driver's licence, and is excited about being able to drive his own car. Yusef understands that it would be extremely dangerous for him to drive his new car and talk on a mobile phone at the same time.

Why, in terms of attention and processing, is it dangerous to carry out both tasks simultaneously?

2 marks

Question 15

Dr Jens, a psychologist, is using hypnosis with a patient as part of a treatment plan. During hypnosis a patient is in an altered state of consciousness. Give three psychological characteristics the patient may report to Dr Jens to indicate he is experiencing an altered state of consciousness.

1. _____

2. _____

3. _____

3 marks

Question 16

The most common brain wave patterns in REM sleep are similar to _____ waves.

These brain waves have a _____ amplitude.

2 marks

Question 17

Name and describe the unique brain wave features that are characteristic of stage 2 sleep.

2 marks

Question 18

Jack has not done much study for his psychology examination. He decides to stay up all night to study for two nights prior to the examination. In terms of the effects of sleep deprivation, give two reasons why this decision may negatively impact on Jack's examination performance.

1. _____
- _____
- _____
- _____
- _____
- _____

2 marks

Question 19

Bobbie is worried about her four-year-old daughter's sleep problems that have been occurring in the middle of the night. She is not sure if her daughter is experiencing nightmares or night terrors. Clearly outline three ways to distinguish between nightmares and night terrors.

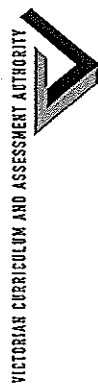
1. _____
- _____
- _____
- _____
- _____
- _____

3 marks

2006 Assessment Report

2006

Psychology GA 1: Written examination 1

**GENERAL COMMENTS**

Students generally performed well on the June 2006 paper, with results, on average, that were comparable with examination 1 in previous years.

In the multiple-choice section all three areas of study were well answered. 'States of consciousness' was the best answered section, with students achieving a mean score of 77.5 per cent. The mean performance for 'Brain and nervous system' was slightly higher than the mean for 'Visual perception', which was least well-answered section.

As in previous years, students did not perform as well on the short-answer questions. This was often due to a lack of precision and completeness in descriptions and definitions, failure to refer to appropriate psychological information or failure to provide appropriate examples even when examples were explicitly required by the question. Students had the most difficulty with 'Visual perception', achieving a mean score of 58 per cent. 'States of consciousness' followed, with a mean of 66 per cent, and 'Brain and nervous system' was the best answered area of study, with a mean score of 70.5 per cent.

Teachers had clearly instructed and directed students' attention to key knowledge and skills in the *Psychology VCE Study Design*. In general, students demonstrated good knowledge and understanding of the curriculum, although, as in previous years, many did not achieve full marks because they failed to address all aspects of the questions in their answers. For example, when required to name and explain the ethical principle broken in Question 13, many students gave only the name or a description of an ethical principle, rather than both.

Students need to ensure that they read the short-answer questions carefully and then check their answers against the question's requirements. Some questions may require a two-part response even though this is not specifically stated; for example, responses to Question 9 should have both nominated the threshold involved and explained why the sister had not noticed the dimming of the light. Similarly, responses to Question 14 needed to refer to both attention and processing.

Short-answer questions worth two marks generally require at least two key terms and/or pieces of information, while those worth one mark generally require one (or sometimes two) key terms and/or pieces of information. Questions worth multiple marks have an appropriate amount of numbered lines in the answer booklet.

SPECIFIC INFORMATION**Section A – Multiple-choice questions**

Students should answer all questions in the multiple-choice section of the paper. If they are unsure of the answer, students are advised to mark the response that is their 'best guess' for any question – it is always possible to change a response by carefully erasing and re-shading. Answering all questions also decreases the likelihood that further answers will be out of synchronisation.

This section of the paper was very well answered, with only three questions resulting in a correct response rate of less than 50 per cent. These questions, along with some other moderately difficult ones, are discussed below.

The table below indicates the percentage of students who chose each option. The correct answer is indicated by shading.

Question	% A	% B	% C	% D	Comments
Area of Study 1 – Brain and nervous system					
1	71	5	23	0	The large number of students who chose alternative A failed to understand the sensitivity of the cerebral cortex. Although it does cover the cerebral hemispheres, its function is not to protect the brain. The only completely correct response was alternative C.
2	70	16	12	2	
3	2	1	97	1	
4	6	3	73	18	

END OF QUESTION AND ANSWER BOOK

Question 3a.

Marks	0	1	Average
%	34	66	0.7

The PET scan:

- is more invasive
- involves injecting a radioactive substance into the body.

Question 3b.

Marks	0	1	Average
%	19	81	0.8

MRI or fMRI scanning

Question 4a.

Marks	0	1	Average
%	80	20	0.2

- Some of the questions are neutral and some are 'probable lie' questions that are intended to slightly increase arousal. This is so that the physiological responses for each can be compared.
- Questions demanding both positive and negative responses are included. This is so that relevant questions demanding either response may be validated.

Many students responded by indicating what control questions are or why they are used; however, this did not answer the question asked.

Question 4b.

Marks	0	1	2	Average
%	11	61	27	1.2

- He may have a naturally high but fluctuating heart rate or breathing rate and may have been interpreted as lying.
- He may be on medication, such as cortisone, which can vary the rate of metabolic function.
- He may have been running a fever, which would change indicators of apparent arousal.
- The baseline may have been incorrectly set by the operator.
- He may have been in a state of arousal through an emotion such as anxiety/anger/excitement and the arousal has been wrongly interpreted as lying.

Many students did not read the question properly and answered as though it were 'Anthony was shown to be telling the truth when in fact he was lying'.

Question 5a.

Marks	0	1	Average
%	25	75	0.8

Stress hormones/hormones/chemicals (adrenaline and, eventually, cortisol) that were released during Zoe's phase of resistance to the stressors of examinations have been counteracted by her immune system, which has become weakened in the process of reducing the level of these hormones. The immune system has therefore become weakened, leaving Zoe more prone to infectious diseases.

Students did not need to specify the name of a hormone in order to gain a mark.

Question 5b.

Marks	0	1	Average
%	10	90	0.9

resistance or exhaustion

Both stages were accepted as the scenario described did not explicitly distinguish between the effects of the original stressor and the additional stressor.

Question 5c.

Marks	0	1	Average
%	41	59	0.6

- to boost Zoe's level of immune system functioning
- to reduce Zoe's level of stress
- to reduce Zoe's levels of sympathetic (autonomic) arousal

Question 6

Marks	0	1	2	Average
%	20	46	34	1.2

The flight-fight response provides physical responses of autonomic arousal such as increased heart rate, blood channelled to the muscles and inhibited digestion, which all prepare an organism to deal with a threat by either running away (flight) or confronting it (fight). This means that the organism is better prepared to survive and thus live on and procreate (breed).

Students should try to avoid using a term as part of its own definition. 'Confront a threat' or 'run away to escape a threat' adequately substituted for 'fight or flee from a threat'.

Question 7

Marks	0	1	2	Average
%	14	42	44	1.3

The participant needs to know:

- the nature of the study – what they will be required to do
- the rights of the participant – confidentiality, withdrawal, debriefing, etc.
- any potential risks involved for the participants.

Many students discussed 'voluntary participation' or 'withdrawal rights' instead of 'informed consent'.

Visual Perception

This was the weakest of the three areas of study in the short-answer section. The relatively poor performance on Question 10 emphasises the need for students to apply their answers to the specific question rather than make generic statements when an application of a concept is required. In this case, the question even highlighted in bold type that the depth cues needed to be applied to 'this picture'.

Question 8

Marks	0	1	2	Average
%	9	16	74	1.7

optic; occipital

As this area of study is Visual perception, only the answers given above were acceptable.

Question 9

Marks	0	1	2	Average
%	31	30	40	1.1

The amount by which the light was dimmed did not reach the Differential Threshold (or Just Noticeable Difference), so Leisel's sister could not tell that it had been dimmed. The amount by which the stimulus intensity is reduced (changed) needs to be more than $\frac{1}{60}^{\text{th}}$ of the original intensity.

Question 10

Marks	0	1	2	3	4	Average
%	19	8	20	14	38	2.5

The pictorial depth cues used in this picture were:

- linear perspective

- interposition (overlap)
- height in visual field (height in plane)
- texture gradient (gradients of texture)
- relative size.

The explanations had to detail how the cues were applied with reference to this specific picture. The depth cue named and the description needed to match in order to earn the marks. Many students confused 'height in plane' with 'relative size' when describing how depth was shown using the trees.

Many students provided generic answers that were not sufficient; for example, stating that 'closer objects obscure more distant objects in the cue of interposition' is not applicable to this picture.

Question 11a.

Marks	0	1	Average
%	35	65	0.7

convergence or retinal disparity

James would have been able to use 'convergence' for a short time when first wearing the eye patch and would then have become unable to use this cue. Therefore, as the question specified that the duration of the treatment was 'several weeks', convergence was an acceptable answer.

A comment on a related question in the 1999 Assessment Report states that, 'Convergence continues to operate for some time after one of the eyes is covered. However, retinal disparity is instantly unavailable when one eye is covered or closed'.

Question 11b.

Marks	0	1	2	Average
%	53	23	24	0.7

accommodation

When within approximately 1.5 metres of the viewer, the lens bulges in order to fine-focus the image on the retina. The brain senses the amount of bulging and flexing of the lens and from this judges distance. The greater the bulging, the closer the object.

Students were required to provide a specific response, as shown above. Many students incorrectly stated that '...the eye bulges ...'

Question 12

Marks	0	1	Average
%	73	27	0.3

A visual illusion occurs when perception consistently differs from objective reality.

The consistency of the occurrence of the illusion was important. Many students simply identified a visual illusion as a visual mistake, therefore failing to distinguish illusions from mirages or errors due to perceptual set. Other answers indicated that the illusion is a 'trick of the eye', which is fundamentally wrong, as the 'trick' is in the interpretation.

Question 13

Marks	0	1	2	Average
%	20	26	54	1.4

The ethical principles broken were:

- voluntary participation – the students were pressured to take part in the experiment because of the incentive offered (credit towards coursework)
- withdrawal rights – the students were told that they could not withdraw from the experiment during the sleep deprivation phase

- professional conduct – the researcher used her position at the university to offer the students an advantage in their coursework if they took part in the study. She also used her authority to insist on students remaining until the end of the experiment.

Many students failed to distinguish between informed consent, withdrawal rights and voluntary participation.

States of Consciousness

Students appeared to have a reasonable knowledge of this area of study, although they did not always answer the questions accurately or fully. For example, Question 17 required the name and description of the unique brain wave features, but many students failed to provide a description.

Question 14

Marks	0	1	2	Average
%	22	50	29	1.1

Driving is a complex task, a controlled process that requires selective attention. In attempting to perform these two tasks at once, Yusuf would be using divided attention and would not be able to concentrate sufficiently on driving, thus causing danger.

Students needed to refer to both attention and processing in order to score full marks for this question.

Question 15

Marks	0	1	2	3	Average
%	26	17	20	37	1.7

Three psychological characteristics the patient may report include:

- differences in attention, for example, a very narrow focus on one thought to the exclusion of all others, or openness to a wide range of stimuli
- heightened or reduced awareness compared with non-waking consciousness (NWC)
- distortions in perception (sensory thresholds) from NWC
- distortions in cognition/memory/thought processes
- distortions in the perception of time (may seem to pass faster or slower) from NWC
- distortions/changes in time orientation
- changes in emotional feeling (greater or less than in NWC)
- changes in self control (greater or less than in NWC)
- changes in openness to suggestibility (greater or less than in NWC)
- changes in perception of pain (may be perceived as more or less intense than in NWC).

The answer did not need to refer to hypnosis as the question asked about altered states of consciousness in general.

Question 16

Marks	0	1	2	Average
%	20	23	57	1.4

beta (with 'saw-tooth' pattern); low

Question 17

Marks	0	1	2	Average
%	51	30	19	0.7

The unique brain wave features that are characteristic of stage 2 sleep are:

- sleep spindles – brief bursts of higher frequency brain waves
- K complexes – single sharp bursts (rise then fall) in amplitude (and lower frequency).

Theta waves are not 'unique brain wave features' characteristic of stage 2 sleep as they also occur in stage 1 and dominate in stage 3.

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2006**

Question 18			
Marks	0	1	2
%	8	33	59
Average	1.5		

Sleep deprivation can cause:

- impairment of memory processes
- a decrease in ability to perform cognitive tasks
- illogical/irrational thought
- lapses in attention and/or concentration
- difficulty focusing the eyes (which hinders reading)
- hallucinations
- micro-sleeps, which would interrupt his train of thought
- drowsiness (he may fall asleep in the exam)
- hand tremors (making it difficult to write answers)
- irritability (therefore he may give up easily or get angry during the exam)
- increased experience of pain, which may hinder concentration on the exam.

Other appropriate, negative effects of sleep deprivation were also accepted. Two responses were needed to gain full marks.

Question 19				
Marks	0	1	2	3
%	20	24	28	27
Average	1.6			

- Night terrors usually occur earlier in the night than nightmares.
- Nightmares are usually more frequent than night terrors.
- Nightmares are more likely to be remembered than night terrors.
- A person experiencing night terrors suddenly wakes up and is extremely upset; someone experiencing nightmares may not wake up.
- Night terrors are usually more upsetting than nightmares.
- Nightmares are more likely to occur in REM (therefore sleep paralysis), whereas night terrors occur in stage 4 N-REM (violent movements can occur).
- Differences in EEG (beta-like waves with sawtooth pattern indicate REM and therefore nightmares; delta waves indicate stage 4 and therefore night terrors) and EOG patterns (high activity indicates REM and therefore nightmares; low activity indicates stage 4 and therefore night terrors).

REM sleep and delta-wave sleep are both forms of deep sleep (which is why REM can be referred to a 'paradoxical sleep').

Many students gave generic answers to this question; however, responses had to relate to Bobbie and her four-year-old daughter to gain full marks. Comments such as 'Nightmares may occur throughout life and night terrors are more common in young children' were not correct as they did not describe a method that would enable Bobbie to decide the nature of the sleep disturbances. As students were asked to distinguish one from the other, they needed to state characteristics of both conditions to gain full marks.

SECTION A – Multiple-choice questions

Instructions for Section A

Answer all questions in pencil on the answer sheet provided for multiple-choice questions.

Choose the response that is correct or that best answers the question.

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AREA OF STUDY 1 – MEMORY

Question 1

Many students complain that they study for an exam and know the material well but later, when they are in the exam, they are unable to recall the information.

This is most likely due to difficulty with

- A. encoding.
- B. storage.
- C. retrieval.
- D. short-term memory.

Question 2

The process by which sensory information is converted into a form that can be stored by the memory system is known as

- A. working memory.
- B. retrieval.
- C. storage.
- D. encoding.

Question 3

The most sensitive measure of memory is

- A. recognition.
- B. recall.
- C. re-learning.
- D. remembering.

Question 4

When Lawrence was at high school, he took ten months to learn a list of Italian vocabulary. Ten years later, he decided to relearn the same information and it took him two months to learn the material to the same level he learned it at high school.

The saving Lawrence has made in re-learning the material is

- A. 100%
- B. 20%
- C. 80%
- D. 50%

Question 5

A person is more likely to be consciously aware of a memory when it is in _____ than in _____.

- A. sensory memory; short-term memory
- B. long-term memory; short-term memory
- C. short-term memory; sensory memory
- D. sensory memory; long-term memory

Question 6

Sensory memory is generally thought of as having _____ capacity and _____ duration.

- A. large; short
- B. large; long
- C. small; long
- D. small; short

Question 7

In comparison with iconic memory, echoic memory has _____ duration.

- A. similar
- B. unlimited
- C. shorter
- D. longer

Question 8

Information in short-term memory, at any given time, typically consists of

- A. information from sensory memory only.
- B. information from sensory memory and long-term memory.
- C. information from long-term memory only.
- D. information from neither sensory nor long-term memory.

Question 9

Chunking is a useful way of enhancing memory.

Chunking works by

- A. increasing the period of time information is in short-term memory.
- B. increasing the period of time information is in long-term memory.
- C. increasing the capacity of long-term memory.
- D. increasing the capacity of short-term memory.

Question 10

Ethan is deciding whether to catch the bus or walk to school.

According to Baddeley's theory of working memory, the subsystem mainly responsible for Ethan's decision making is

- A. the phonological loop.
- B. the visuospatial sketchpad.
- C. the central executive.
- D. the articulatory control system.

Question 11

In order to pass from short-term memory to long-term memory, information must be

- A. chunked.
- B. encoded.
- C. meaningful.
- D. useful.

Question 12

Which one of the following is an example of an elaborative rehearsal that could be used to learn the names of a group of people?

- A. writing a list of names
- B. looking at each face and saying the name over and over
- C. rehearsing the names in alphabetical order
- D. reading the names many times

Question 13

Which one of the following statements about semantic network theory is **not** true?

- A. Grouping of information in long-term memory is based on meaning.
- B. Concepts with strong relationships have strong links.
- C. Retrieval of a memory may trigger retrieval of other linked memories.
- D. Only meaningful material can be stored in long-term memory.

Question 14

You are trying to learn a speech.

In order to increase your chances of recalling the whole speech from memory, you should give extra practice time to the

- A. middle of the speech.
- B. beginning of the speech.
- C. end of the speech.
- D. beginning and end of the speech.

Question 15

Adam is looking through his atlas for a suitable outline map of New Zealand to trace.

His ability to recognise New Zealand is a function of his

- A. geographical memory.
- B. procedural memory.
- C. semantic memory.
- D. episodic memory.

Question 16

Which one of the following is a possible explanation of why forgetting occurs?

- A. Suitable retrieval cues are not used.
- B. Memory fades through overuse over time.
- C. Material has been attended to in short-term memory.
- D. The subject is motivated to remember.

Question 17

Caitlin suffered a head injury after a bicycle accident. Caitlin's doctor told her that she was experiencing anterograde amnesia.

The doctor may have come to this conclusion based on Caitlin's

- A. difficulty forming new social relationships.
- B. inability to remember getting ready for work before the accident.
- C. ability to recognise her family members.
- D. epileptic seizures following the accident.

Question 18

Which one of the following is **not** an expected effect of ageing on memory?

- A. taking longer to develop new skills
- B. decline in episodic memory
- C. decline in procedural memory
- D. slowed retrieval of information from memory

Question 19

Melina witnessed a bank robbery. Afterwards Melina had difficulty describing the robbery to the police. The police suggested that taking her back to the site of the robbery may help her recall what happened.

This is an example of the use of

- A. state dependent cues.
- B. context dependent cues.
- C. mnemonic devices.
- D. elaborative rehearsal.

Question 20

Georgia uses the method of loci to memorise a shopping list.

One way she could do this would be to

- A. create a map to find her way to the supermarket.
- B. visualise each item on her list with different landmarks on the way to school.
- C. recall items on her list according to their normal locations in her house (for example, milk in the fridge, shampoo in the shower).
- D. look out of the window of her bus and learn the landmarks on the way to school.

Questions 21 and 22 relate to the following information.

Dr Dalling is conducting a university classroom exercise on the effect of pain on the recall of information. She follows accepted ethical guidelines to obtain informed consent from 40 adults.

Group 1 is given a list of words to memorise, and asked to recall them in the order in which they were learnt. Group 2 is given the same list of words to memorise, but is given a painful pinprick on the back of the hand every two minutes while attempting to learn the words.

The participants are then asked to recall the words in the order in which they were learnt.

Dr Dalling's prediction is that Group 2 will recall more words than Group 1.

Question 21

The ethical principle that Dr Dalling has **not** adhered to is

- A. confidentiality.
- B. informed consent.
- C. parental consent.
- D. beneficence.

Question 22

Dr Dalling's operational hypothesis for this study would be

- A. participants who recall fewer words will, most likely, have experienced pain while learning.
- B. participants in Group 2 will remember more words than participants in Group 1.
- C. participants who experience a painful pinprick on the back of the hand while memorising information will recall fewer words than participants who do not experience a painful pinprick on the back of the hand while memorising the same information.
- D. participants who experience a painful pinprick on the back of the hand while memorising a list of 40 words will recall more words than participants who do not experience a pinprick.

SECTION B – Short answer questions

Instructions for Section B

Answer all questions in the spaces provided.

AREA OF STUDY 1 – MEMORY

Question 1

Karlee's friend tells her the name and address of a great new music store. Karlee does not have a pen or paper to write down the information, so she repeats it over and over to herself.

- a. In which memory system is the address of the music store being rehearsed?

1 mark

- b. Name a mnemonic technique Karlee could use to increase her chances of being able to remember the name and address of the music store in a week's time. Explain how Karlee would apply this technique to the information.

Name _____

Explanation _____

2 marks

Question 2

After spending one hour studying for his learners permit test, Connor went to watch an exciting football match. With reference to the consolidation theory, what effect would watching the football match have on his ability to recall the learners permit test information the following morning?

3 marks

Question 3

The component of working memory known as the _____ holds verbally produced sounds and words, while the component of working memory known as the _____ allows visual images to be held temporarily.

2 marks

Question 4

Olga is a happy, active and healthy 70-year-old woman. At a school reunion an old friend asks if she can remember an incident that occurred at Olga's 21st birthday party. However, Olga is unable to remember the event.

- a. Explain why Olga may have forgotten this incident in terms of both decay theory and motivated forgetting theory.

1. decay theory

2. motivated forgetting theory

4 marks

Olga's inability to remember the incident might be due to retrieval failure.

- b. With reference to semantic network theory, how could Olga improve her ability to remember the incident?

2 marks

AREA OF STUDY 3 – RESEARCH INVESTIGATION

*Read the following research study. All the questions which follow relate to this study.
Answer all the questions.*

Testing the Mozart effect

Previous research has shown that listening to certain types of classical music (for example, a Mozart concerto) may increase performance on spatial-temporal tasks for a short period of time. However, this research has been disputed.

Professor Williams aims to investigate the effect of classical music on a spatial-temporal task that involves paper folding and cutting. He plans to find out if the effect exists for VCE students at Lake Hilltop Secondary College, a coeducational country school.

Professor Williams recruits participants who are studying VCE at the school. He asks the first 40 students that visit the library to participate. All 40 students provide signed informed consent.

The participants sit quietly for 20 minutes and then attempt the first paper folding and cutting test (Condition 1).

The same participants then listen to classical music for the next 20 minutes. Immediately afterwards they complete a similar paper folding and cutting test (Condition 2).

Professor Williams asks a teacher, who does not know which test relates to which condition, to mark the tests.

The results are as follows.

Condition 1 (control): Mean test score = 8

Condition 2 (listening to classical music): Mean test score = 12

A statistical test on these results found that $p < 0.05$

Question 9

For this study, what is the

- i. independent variable?

- ii. dependent variable?

1 + 1 = 2 marks

Question 10

Construct an operational research hypothesis for this study.

2 marks

Question 11

- a. Was random sampling used in this study? Explain your answer.

1 mark

- b. Why is random sampling often a preferred sampling technique?

1 mark

Question 12

- a. Name the experimental design used in this study.

1 mark

There is a basic flaw in the method of this study.

- b. Name this flaw, and clearly explain how it could have affected the results.

Name _____

Explanation _____

2 marks

- c. Name and describe one method of overcoming this design flaw.

Name _____

Description _____

2 marks

Question 13

Outline the withdrawal rights that the participants are entitled to both during and after the study.

2 marks

Question 14

Are the results statistically significant?

1 mark

2006 **Psychology GA 3: Written examination 2**

GENERAL COMMENTS

Students' performance on the 2006 examination 2 paper was slightly superior to previous years, especially in the Short answer section. Some improvement was shown in this section, especially in terms of addressing the instructional terms in the questions. However, as in the Unit 3 examination, it appeared that students continued to have some difficulty interpreting questions and often lost marks due to a lack of precision in their responses. In each of the first three Areas of Study, the mean score on the Multiple-choice section was superior to the mean score on the equivalent Short answer section.

As in 2005, but in contrast to previous years, the 'Learning' section yielded the highest average score in the Short Answer section (63 per cent), with 'Memory' (56 per cent) next and 'Research Methods' (46 per cent) being the most problematic. In the Multiple-choice section, the average scores for 'Memory' and 'Learning' were very similar (71 per cent and 70 per cent respectively).

Students are encouraged to attempt all questions in the Multiple-choice section rather than leaving any lines blank. Not only is it impossible to achieve a mark if no response is given, it also increases the likelihood that later answers on the computer-scored sheet will be out of synchronisation, and marks cannot be awarded where answers are shaded on incorrect lines. Marks are not lost for incorrect responses, therefore if they are unsure of an answer, students are advised to mark the response that is their 'best guess' – it is always possible to change a response later.

Marking Policy – Section B, short answer questions

unmarking policy – Section 2, short answer questions

Where a question requires definition of a term, use of the term (or its derivatives) as part of its own definition precludes the award of full marks for that response. Such responses clearly do not show full understanding of the term. In this examination, this related to Question 6 in Area of Study 2.

This examination contained several questions in which students were required to answer with respect to a certain theory or context; for example, 'With reference to consolidation theory' (Question 2, Area of Study 1) and 'In terms of both decay theory and motivated forgetting theory' (Question 4a., Area of Study 1). Students must be careful to follow the instructions in such cases.

In Area of Study 3, each question must be answered with reference to the research study described, as stated in the instructions on the examination paper. Generic answers do not show a clear understanding and cannot gain full marks.

SPECIFIC INFORMATION

Section A – Multiple-choice questions

Section A – Multiple-choice questions					Comments
Question	% A	% B	% C	% D	
Area of Study 1 – Memory					
1	3	3	94	1	
2	5	1	3	91	
3	11	11	77	2	There is some confusion about the sensitivity of the different measures of memory, and there are slight differences depending on which register or division is being considered. Consistently in VCE examinations, the most sensitive measure of memory is accepted to be re-learning.
4	2	7	86	5	
5	8	13	57	22	If a person is aware of a memory, then that memory cannot be in sensory memory because attention has been paid to it.
6	78	3	3	15	
7	8	3	8	80	
8	19	77	1	4	
9	10	2	6	82	

Question 15

What conclusion can be made about the population from which the sample is drawn? Explain.

2 marks

Question 16

Professor Williams writes a formal research report. List two main points of information he should include in the discussion section of his report on this study.

1. _____
2. _____

2 marks

Question	% A	% B	% C	% D	Comments
10	8	10	74	5	Students who chose option C, 'meaningful' showed a lack of understanding of levels of encoding. 'Structural encoding' (according to the physical characteristics of the item to be stored) and 'phonemic encoding' (according to the sound of the item to be stored) do not involve meaning, which is required for 'semantic encoding'.
11	2	68	28	2	Elaborative rehearsal involves adding meaning and linking the items to be remembered to items already in memory. Only option C, 'rehearsing the names in alphabetical order' complies with the explanation. Option C, 'looking at each face and saying the name over and over' is simply another form of maintenance rehearsal.
12	6	55	54	5	
13	10	10	5	75	
14	91	2	1	7	
15	6	4	83	6	
16	89	7	3	1	
17	62	18	16	4	Anterograde amnesia refers to a condition in which new memories cannot be effectively consolidated after a trauma; usually people can recall information for several minutes but the formation of the memory traces is never completed. In extremely rare cases only short-term memory will remain. This means that the relatively popular options B and C were clearly incorrect.
18	14	13	64	9	The study design refers only to the effects on memory of ageing in a healthy individual.
19	11	84	3	2	It is likely that the use of the term 'locations' in option C caused a significant number of students to choose this incorrect answer.
20	1	62	37	0	
21	8	3	2	86	
22	1	4	20	75	
Area of Study 2 – Learning					
23	9	1	84	6	The elimination of obviously incorrect alternatives yielded the correct answer:
24	40	41	10	8	<ul style="list-style-type: none"> fixed action patterns are not simple responses (option A) fixed action patterns are not learned or conditioned (option C) fixed action patterns are genetically programmed (option D).
25	18	4	76	2	One of the characteristic features of taste aversion is that the response occurs hours after the conditioned stimulus (tasted food) is presented. This eliminates option A.
26	49	38	6	8	Option D is incorrect as one-trial conditioned taste aversion has no resemblance whatsoever to negative reinforcement.
27	14	14	50	22	The study design stipulates that Skinner's original research should be studied in the context of operant conditioning.
28	73	7	18	2	
29	9	16	52	17	
30	10	36	17	7	
31	22	75	2	2	This question may be taken as an indicator of the degree of detail in which schedules of reinforcement should be studied.
32	7	10	29	53	
33	78	20	2	0	
34	91	8	0	1	

Question	% A	% B	% C	% D	Comments
35	3	78	12	10	
36	12	6	15	67	
37	3	78	7	12	
38	9	7	75	8	
39	2	4	88	6	
40	16	25	53	5	It may assist students to remember that Bandura referred to modelling as 'Social Learning Theory'.
41	4	90	2	4	
42	20	2	8	70	
43	30	62	6	2	
44	2	95	1	2	

Section B – Short answer questions Area of Study 1 – Memory

Question 1a.

Marks	0	1	Average
%	19	81	0.8

Short-term memory or working memory

This question was well answered.

Question 1b.

Marks	0	1	2	Average
%	27	16	57	1.3

Examples of acceptable techniques included:

- narrative chaining
- method of loci
- peg word method
- acronym
- acrostic
- rhyming.

Examples as acceptable explanations included:

- narrative chaining: Karlee takes the name and address of the music store (Marley's Music, 49 Butler Avenue, Melbourne) and creates a story out of the words; for example, 'Bob Marley makes great music, although he is on his 49th Melbourne butler'
- method of loci: Karlee pictures (visualises) the store name and address (Mickey's Music, Swan Street) as Mickey Mouse and a swan located at specific positions on a well-known journey or in a well-known location, so that she can re-visit these places in her imagination and allow the locations to cue the images.

Any mnemonic technique was acceptable, provided the explanation matched and the explanation worked with the example given in the stem.

Many students used such mnemonics as 'acronyms' or 'acrostics' as their examples. These were acceptable, providing an appropriate example was given, but students and teachers should note that the study design only nominates 'narrative', 'chaining' and 'method of loci'. Students must have knowledge of the techniques listed in the study design, as future examination questions may restrict answers to these techniques.

Question 2

Marks	0	1	2	3	Average
%	36	25	24	14	1.2

Students' answers should have referred to the following information.

- The transfer of information from short-term memory to long-term memory requires a period of time for stabilisation (consolidation) to occur for it to be properly stored.

- Neural (organic/biological/chemical, etc.) changes in the brain that occur when something new is being learned occur for a period of time after learning.

Either of the following conclusions was acceptable.

- The exciting football match should not have caused disruption to the consolidation process, as the two types of information are sufficiently different not to interfere with one another, and Connor's ability to remember the information the following morning would not be affected.
- There could be some disruption in consolidation because the new experience influences mental function and processes.

This question was poorly answered. The main difficulty was a failure to respond in terms of consolidation theory, as required by the question.

Question 3		0	1	2	Average
Marks		37	6	57	1.2
%					

- phonological loop/articulatory rehearsal loop/rehearsal loop
- visuospatial sketchpad

Although some texts indicate a dual role for the articulatory loop, it is emphasised that it is the storage component, as shown in this response, that was required by the wording of the question.

Question 4a.		0	1	2	3	4	Average
Marks		9	14	36	13	28	2.4
%							

Decay theory

- The physical (chemical/biological/organic) trace of the event (or 'memory trace') was formed in Olga's brain when Olga experienced the incident.
- The physical or chemical trace has faded due to it not being regularly re-visited during her lifetime.

Motivated forgetting theory

- This could occur if the incident at Olga's 21st birthday was traumatic or extremely upsetting.
- Olga may have continually kept the memory from conscious awareness.

Students who did not clearly relate the forgetting to the theory required were not able to gain full marks for this question.

Question 4b.		0	1	2	Average
Marks		26	45	29	1.1
%					

The semantic network theory states that information in long-term memory is stored in overlapping networks of interconnected concepts. The activation of one node or piece of information activates other related nodes. Olga could think about other things related to her 21st birthday party, such as who was present or what she was wearing (which would be stored in the same 'region' as the memory of the event), and trace associated concepts for links to the memory of the incident. Or, Olga could use context or state-dependent cues to attempt to enable her to access the specific items in her semantic network.

Again, the problem for many students was failing to refer to semantic network theory and its role in this recall.

Area of Study 2 – Learning

Question 5a.		0	1	Average
Marks		30	70	0.7
%				

Classical conditioning

The most common error was to identify this as 'one-trial learning'. In the *Psychology VCE Study Design*, the relevant dot point on page 27 states 'one-trial learning with reference to taste aversion'.

Question 5b.

		0	1	2	3	4	Average
Marks		3	8	23	26	41	3.0
%							

5bi.

Elise's favourite song

5bii.

Elise crying and shaking/being upset at the sound of the song

5biii.

Near-accident with the bus/bus just missing Elise

5biv.

Elise crying and shaking/being upset because of the near-miss

The additional information highlighted in bold was essential for an entirely correct answer.

Question 5c.

		0	1	Average
Marks		25	75	0.8
%				

Stimulus generalisation

Question 5d.

		0	1	Average
Marks		16	84	0.9
%				

Extinction

Question 6

		0	1	2	Average
Marks		42	24	34	0.9
%					

Negative reinforcement occurs with the removal of an unpleasant (aversive/hasty) stimulus. This produces an increase in the strength, likelihood or frequency of a response. For example, removal of a headache (unpleasant stimulus) by taking Panadol increases the likelihood that Panadol will be taken the next time you have a headache.

The most common error was to confuse 'negative reinforcement' with 'punishment'. Students must be careful to ensure that the example they give clearly illustrates the required process, as many descriptions were vague or superficial.

Question 7

		0	1	2	Average
Marks		53	32	15	0.6
%					

Initially, Thorndike's cat tried to escape the puzzle box using 'trial and error' (random voluntary movements) trying many techniques until it accidentally pulled the string and the door opened so that it could reach its reinforcement (food). After several trials, the cat learned to pull the string to escape the box and reach the food. Thorndike concluded that the cat had learned the association between its behaviour (pulling the string) and the consequences (reaching the food). This is instrumental learning.

This question was very poorly answered, mainly because students did not follow the instructions in the question and relate their answer to Thorndike's puzzle box experiment.

Question 8a.

		0	1	2	Average
Marks		7	57	36	1.3
%					

Appropriate reasons included:

- for punishment to be effective, it should be presented immediately following the undesirable behaviour – it was several hours before John inflicted his punishment
- for punishment to be effective, it must be clearly linked with the undesirable behaviour in the mind of the learner (child)
- the punishment (smack) may not be appropriate or seen as a punishment by the toddler; that is, it may give him attention that he craves from his father
- physical punishment such as a smack may cause the toddler to feel aggressive or resentful towards his father
- punishment does not give alternative ways of behaving, so the misbehaviour is likely to be replaced by another unwanted behaviour.

Question 8b.

Marks	0	1	Average
%	18	82	0.8

Jackie and John could give their son tokens or rewards for positive behaviour, such as giving him a cuddle when he behaves, telling him he is a good boy, etc.

This question was well answered.

Area of Study 3 – Research Investigation

Question 9

Marks	0	1	2	Average
%	35	30	34	1.0

9i. Whether students listen to classical music before completing the paper task or not.

Although 'listening to classical music' was acceptable, 'listening to classical music while performing the paper folding and cutting task' was not correct.

9ii.

The score obtained on the paper folding and cutting test or the performance on spatio-temporal tasks.

Question 10

Marks	0	1	2	Average
%	48	34	18	0.7

That VCE students from Hilltop Secondary College who listen to classical music for twenty minutes before performing spatio-temporal tasks will perform better on these tasks – operationalised as a score on a paper folding and cutting test (that is, they will score higher on this test than when they do not listen to classical music prior to performing spatio-temporal tasks).

Essential components of an operational hypothesis are:

- statement of population
- statement of independent variable
- operationalisation of the independent variable if it is other than a forced dichotomy
- statement of dependent variable
- operationalisation of dependent variable.

This question was poorly answered. Students needed to demonstrate their understanding of operationalisation and that a hypothesis is a statement of the predicted effect of a change in the independent variable on the value of the dependent variable.

Question 11 a.

Marks	0	1	Average
%	56	44	0.5

Random sampling was not used in this study. Random sampling would allow every member of the population the same chance of being involved in the study. This did not occur as Professor Williams used the first 40 students who walked into the library.

This was a surprisingly low score for such a straightforward question, demonstrating that the concept of random sampling was not well understood.

Question 11b.

Marks	0	1	Average
%	62	38	0.4

Random sampling is often preferred as it is more likely that a sample gained this way will be representative of the population of interest and/or participant variables will be distributed in the sample in the same proportions as in the population (so their effects on the dependent variable will be eliminated).

Merely stating that it is preferred because every member of the population has the same chance of being selected, as many students did, was not awarded a mark as this did not provide an explanation of why random sampling is preferred. Sampling (as a means of eliminating participant variables as potential confounds) was obviously not well understood.

Question 12a.

Marks	0	1	Average
%	41	59	0.6

Either of:

- repeated measures design
- within participants design
- within subjects design.

Question 12b.

Marks	0	1	2	Average
%	41	29	30	0.9

Either of:

- order effect(s)/practice effect: the sequence in which the conditions were performed may become an extraneous variable as performance on the task completed second may be better because of the experience gained in completing the first task, and not because of the classical music
- boredom effect: participants may be fatigued or bored when they come to complete the second task and not perform as well.

The phrasing of the question required that a basic flaw in the research design should be identified. Flawed methodology in terms of sampling procedures or placebo effect did not address this point.

Question 12c.

Marks	0	1	2	Average
%	51	17	32	0.8

Counterbalancing: the order in which the conditions of a repeated measures experiment are completed are arranged so that each condition occurs equally often in each position.

Of students who obtained any marks for this question, two thirds gained full marks. This suggests that when counterbalancing had been learned it was a concept that was well-understood. The 50 per cent of students who obtained no marks tended to either make no response or made an error in identifying the design flaw in part b.

Question 13

Marks	0	1	2	Average
%	7	46	46	1.4

- Participants are entitled to leave the study at any time during the conduct of the study.
- Participants may withdraw their results from the study at any time following the completion of the study.

Some students confused 'withdrawal rights' with 'voluntary participation'.

Question 14

Marks	0	1	Average
%	18	82	0.8

The results are statistically significant. The probability that the results occurred by chance alone is stated to be less than five per cent ($p < .05$).

This question was well answered.

Question 15

Marks	0	1	2	Average
%	76	10	14	0.4

No conclusion can be made about the underlying population from which the sample is drawn because (either):

- participants were not selected by random selection (and therefore the sample is not representative of the underlying population)
- the repeated measures design was not counterbalanced, therefore the researcher cannot conclude that the results were due to the effect of the independent variable alone.

The majority of students indicated some form of conclusion, almost certainly because of the statement that the probability was less than .05. It is emphasised that a statistically significant result may be obtained but, where confounding variables invalidate the methodology, no conclusion about the population may be drawn.

Question 16

Marks	0	1	2	Average
%	33	35	32	1.0

Possible responses included:

- interpretation and explanation of results (statement of statistical significance)
- a conclusion as to whether hypothesis was supported or rejected
- generalisation of the results to the population from which the sample was drawn
- a description of theory/previous research referred to in the introduction, and a comparison with the results of this study
- a description of extraneous or confounding variables and their possible impact on the results
- suggestions as to how to control extraneous variables should the study be repeated
- suggestions for further research following on from this study
- a statement that no conclusions can be drawn because of the flawed method.

This question was poorly answered, which was surprising as every student must complete a research investigation and write a report as a work requirement for Unit 4. The contents of the discussion of such a report are exactly what was required of Professor Williams.